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TECHNICAL MEMORANDUM
Utah Coal Regulatory Program

September 14, 2009

TO: Internal File

THRU: Dave Darby, Team Lead

FROM: James D. Smith, Environmental Scientist III 9/12/09

RE: Lila Canyon Detailed Design Changes, UtahAmerican Energy, Inc, Horse Canyon Mine, Permit #C/007/0013, Task ID # 3351

SUMMARY:

The applicant submitted design changes to the current mining and reclamation plan for the Lila Canyon Mine on July 28, 2008. Deficiencies were identified in a Letter of Deficiency dated January 26, 2009, which included deficiencies from the hydrology Tech Memo dated December 11, 2008. The Permittee responded to those deficiencies on July 115, 2009, and this Tech Memo addresses the changes in the hydrology sections of the application.

DEFICIENCIES - SUMMARY:

R645-301-121.200, -150, The Permittee must provide Figures 1, 2, 3, 4, 4a, 7, and 8 in Appendix 7-4, in both the electronic and paper copies.

R645-301-121.200, -150, The Permittee should either provide Figures 5 and 6 or list them as "Removed" in the appropriate Table of Contents of Appendix 7-4 (approximately page 41).

R645-301-121.200, The Permittee must list Figures 7 and 8 in the appropriate Table of Contents of Appendix 7-4 (approximately page 55).

R6435-301-536.500, The Permittee needs to document:

- that the Wildcat Loadout is willing to accept the Lila waste,
- that the Wildcat Loadout is able to accept the waste; that the Wildcat Loadout refuse pile is adequately designed and of sufficient size to handle and dispose of the additional waste, and

- the sections of the Wildcat Loadout MRP that describe the management and reclamation of the Wildcat refuse pile.

R6435-301-536.500, The Permittee must show how disposal of refuse at ECDC will satisfy the Coal Mining Rules. It must be added that even if the Permittee provides this information, whether or not the Division has the regulatory authority to allow such a variation from the Coal Mining Rules is still open to question.

R6435-301-536.600, -553; 830.130, -830.200, The Permittee needs to update the Mass Balance volumes in Table 1 of Appendix 5-4 using the cross sections on updated Plates 5-7A, -7B, and -7C. The Permittee must provide information on the removal or reclamation of the rock-slope underground development waste refuse pile.

R645-301-742.300, The Permittee must clarify the following information on diversions:

- Table 6 (Appendix 7-4) does not show undisturbed area UA-5 reporting to any structure other than UC-1. Plate 7-5 does not show a ditch that can collect the runoff from UA-5 and carry it to UC-1. The Permittee needs to design a ditch to carry the undisturbed runoff from UA-5 to UC-1, include the calculation sheets and design information, and show the diversion on appropriate plates.
- Plate 7-5 shows DD-20 receiving flow from DC-8 and DD-8b then crossing the east side of disturbed area DA-8c, continuing southwest across adjacent undisturbed UA-5, and then along the down-slope edge of UA-5 to Sedimentation Pond #1; as shown, DD-20 would intercept most of the runoff from UA-5 and carry it to Sedimentation Pond #1 rather than to UC-1. According to Plate 7-5 and Table 6, culvert DC-8 reports to both DD-8c and DD-20, but Table 6 shows DD-8b reports only to DD-8c. DD-20 as shown on Plate 7-5 and described in Table 6 is not only not needed, but carries undisturbed drainage from UA-5 to Sedimentation Pond #1. The Permittee needs to redesign DD-20 or remove it from the plan.

TECHNICAL ANALYSIS:

GENERAL CONTENTS

PERMIT APPLICATION FORMAT AND CONTENTS

Regulatory Reference: 30 CFR 777.11; R645-301-120.

Analysis:

The following deficiencies were identified in the January 2009 Deficiency Letter:

R645-301-121.200-JDS, The Permittee needs to remove the incomplete version of Appendix 7-4 from both the hard and electronic copies of the submittal, and submit a complete copy of the revised Appendix 7-4 with the PE stamp(s) signed and dated.

R645-301-121.200, -150-JDS, The Permittee must provide Figures 1, 2, 3, 4, 4a, 5a, 5b, 6a, 6b, 7 and 8 of Appendix 7-4 in both electronic and paper copies of the submittal.

The Permittee removed the incomplete version of Appendix 7-4. The submitted version of Appendix 7-4 is PE stamped by both Dan Guy and Jay Marshall, and Mr. Marshall's stamp is dated and signed.

The C2 form states that all of Appendix 7-4 is being replaced. The currently approved Appendix 7-4 includes eight figures, Figures 1, 2, 3, 4, 4A, 5, 6, and 8, and the Table of Contents on page 3 shows that Figure 7 has been "Removed". The July 2009 submittal does not contain any of these figures, but the Table of Contents on page 3 indicates figures 1, 2, 3, 4 and 4A should be included, and the text of Appendix 7-4 refers to Figures 1, 3, 4, 4A, 7, and 8. Figures 7 and 8 should be listed in the appropriate Table of Contents (probably page 55). The current submittal eliminates Figures 5 and 6 – Stage Volume and Stage Discharge curves for the sedimentation ponds - but the same information is in Tables 12a, 12b, 13a, and 13b. Figures 5 and 6 should be listed in the appropriate Table of Contents as "Removed" (probably page 41).

The following table shows the figures in the current Appendix 7-4 and those that are missing from the July submittal.

	App. 7-4 of Current MRP (5/18/2007)			App. 7-4 of July 2009 Submittal		
	Listed in Table of Contents	Figure in App. 7-4 of MRP?	Referred to on page -	Listed in Table of Contents	Figure in App. 7-4 of MRP?	Referred to on page -
Figure 1	Yes	Yes	8	Yes	No	8
Figure 2	Yes	Yes		Yes	No	
Figure 3	Yes	Yes	11	Yes	No	11 (twice)
Figure 4	Yes	Yes	9, 35	Yes	No	9, 57
Figure 4A	Yes	Yes	10	Yes	No	10
Figure 5	Yes	Yes		No	Removed	Replaced by Tables 12a, 12b, 13a, and 13b

Figure 6	Yes	Yes		No	Removed	Replaced by Tables 12a, 12b, 13a, and 13b
Figure 7	"Removed"			No	No	57
Figure 8	No	Yes	38	No	No	60

In summary, the Permittee must include the following seven Figures in Appendix 7-4:

Figure 1: noted in the ToC and referenced in the text
Figure 2: noted in the ToC
Figure 3: noted in the ToC and referenced in the text
Figure 4: noted in the ToC and referenced in the text
Figure 4A: noted in the ToC and referenced in the text
Figure 7: referenced in the text
Figure 8: referenced in the text

Findings:

R645-301-121.200, -150, The Permittee must provide Figures 1, 2, 3, 4, 4a, 7, and 8 in Appendix 7-4 (in both the electronic and paper copies).

R645-301-121.200, -150, The Permittee should either provide Figures 5 and 6 or list them as "Removed" in the appropriate Table of Contents of Appendix 7-4 (approximately page 41).

R645-301-121.200, The Permittee must list Figures 7 and 8 in the appropriate Table of Contents of Appendix 7-4 (approximately page 55).

OPERATION PLAN

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

Analysis:

Coal Mine Waste

The Permittee intends to treat the rock-slope underground development waste differently from other coal-mine waste; however, it is coal mine waste and the Permittee must handle and dispose of it in accordance with all R645 rules that pertain to coal mine waste and refuse piles.

Refuse Piles

The following deficiencies were identified in the January 2009 Deficiency Letter:

R645-301-121.100, -200-JDS, The Permittee needs to correct the statement in Section 553 that states:

Some minor cut slopes along the reclaimed road may be left after reclamation due to the difficulty and inability to reclaim all material pushed over the side while making the road cut. See plate 5-7B-1, cross- section 16+00 for details.

to state that cross-section 16+00 is on Plate 5-7B-2 rather than 5-7B-1.

The Permittee should also confirm that the new cross-section 16+00 shows the details mentioned.

The Permittee has corrected the statement to read that cross-section 16+00 is on Plate 5-7B-2, and cross-section 16+00 shows cut slopes remaining after reclamation.

The following deficiencies were identified in the January 2009 Deficiency Letter:

R645-301-121.100, -200-JDS, The Permittee needs to clarify the statement in Section 553 All underground development waste brought to the surface and coal processing waste generated on the surface as a result of coal processing will be placed in the coal mine waste (refuse) disposal area and reclaimed in accordance with R645 regulations.

R645-301-536.510-JDS, The Permittee must provide references to the sections of the Wildcat Loadout MRP that describe the management and reclamation of the Wildcat refuse pile.

Section 553.210 has been rewritten to read: "All underground development waste brought to the surface will be placed in the coal mine waste (rock slope material) disposal area and reclaimed in accordance with the R645 regulations. Coal processing waste

generated on the surface as a result of coal processing will be shipped to [the East Carbon Development Corp. landfill in East Carbon]."

According to Appendix 5-7, construction of the rock tunnels will generate approximately 28,000 cubic yards of rock-slope underground development waste. This material, which is anticipated to contain insignificant amounts of coal, will be used to construct the Shop-Warehouse pad (Plate 5-2). Coal processing waste and underground development waste other than the rock-slope development waste will go to a temporary storage pile on the ROM Coal Stockpile pad (Plate 5-2); when enough material has accumulated in this temporary pile, it will be transported to ECDC or another approved disposal facility for permanent disposal (Appendix 5-7, p. 1). Hauling the refuse to ECDC is mentioned again in Sections 553.300; however, Sections 528.321, 536.100, and 542.730 identify Wildcat Loadout as the location for disposal of these wastes.

ECDC is not permitted under SMCRA or the Utah Coal Mining Rules to receive and dispose of coal mining waste. Before the Division can approve the plan to dispose of the coal mining waste at ECDC, the Permittee must document that ECDC 1) is willing to accept Lila's coal mining waste and 2) can properly handle and dispose of the coal mining waste in compliance with SMCRA and the Utah Coal Mining Rules. Utah's Coal Mining Rules require coal mining waste be disposed of within the permitted area so that reclamation, re-vegetation and other design standards can be applied and performance guaranteed by the surety. Offsite disposal would require assurance that the disposal will meet all of the SMCRA requirements, including a bond. The burden is on the Permittee to show how disposal at ECDC will satisfy the Coal Mining Rules. It must be added that even if the Permittee provides this information, whether or not the Division has the regulatory authority to allow such a variation from the Coal Mining Rules is still open to question.

Because both Wildcat Loadout and Horse Canyon - Lila Canyon Mine are permitted under the State program, Wildcat can accept coal mining waste from the Lila Canyon operation (R645-301-528.320). Wildcat Loadout has a refuse pile for disposal of coal mining waste. However, the Permittee needs to document 1) that the Wildcat Loadout is willing to accept the Lila waste, 2) that the Wildcat Loadout is able to accept the waste; that the Wildcat Loadout refuse pile is adequately designed and of sufficient size to handle and dispose of the additional waste. The Permittee must also provide references to the sections of the Wildcat Loadout MRP that describe the management and reclamation of the Wildcat refuse pile.

Statements at sections 536 and 553 of the MRP must clearly indicate that rock-slope underground development waste will not be mixed or stored with other types of underground development waste and coal processing waste and that all coal processing waste and

underground-development waste other than the rock-slope underground development waste will be shipped to Wildcat loadout for permanent disposal.

The following deficiency was identified in the January 2009 Deficiency Letter:

R6435-301-536.600, -553-JDS, Section 553.250 states the refuse pile (rock slope disposal area) design is shown in Appendix 5-7, but Appendix 5-7 contains only a sketchy narrative of the proposed rock-slope underground development waste refuse pile construction and reclamation.
The Permittee must provide information on the design, construction, operation, maintenance, and removal or reclamation of the rock-slope underground development waste refuse pile.

The Permittee responded by changing Section 553.250 to read, "A need for a refuse pile at Lila Canyon is not anticipated." This is erroneous because the entire Shop-Warehouse pad, the "rock disposal area" where rock-slope underground development waste will be permanently disposed, is - by the definitions in the R645 rules - a refuse pile for disposal of underground development waste (slope rock), even if this material is not acid- or toxic-forming. The Permittee must eschew language indicating that it is anything other than a refuse pile.

Appendix 5-7 contains a brief narrative of the proposed rock-slope underground development waste refuse pile construction and reclamation. Reference is made to Chapter 3 for soil redistribution. Appendix 5-8 contains more details. Mass Balance volumes are shown in Table 1 of Appendix 5-4; however, this table has not been updated using the cross sections on updated Plates 5-7A, -7B, and -7C.

The following deficiency was identified in the January 2009 Deficiency Letter:

The Permittee must provide mass balance accounting for the material to be redisturbed and recontoured from the refuse pile, coal stockpile, and bathhouse-office-parking pads at reclamation, especially the 28,000 yd^3 of rock-slope underground development waste.

Redisturbance of the soils covering the rock-slope underground development waste refuse pile, when the pads are recontoured during reclamation, must be discussed.

The Permittee responded that the mass balance accounting for cuts and fills is in the spreadsheets at the end of Appendix 5-4. The spreadsheets, dated November 8, 2007, are for construction and do not cover reclamation. The response also states that Appendices 5-7 and 5-8 discuss the recontouring of the pads, and that the rock-slope material has not been demonstrated to be acid- or toxic-forming: if future testing determines it to be so, it will be treated as such.

Appendix 5-7 contains only a brief narrative describing the proposed refuse pile construction and reclamation. The cross-sections on Plates 5-7A-1 through 5-7B-3 show there will be extensive cut-and-fill to construct the refuse pile, coal stockpile, and bathhouse-office-parking pads, yet Appendix 5-7 does not mention this. The cross-sections show that during reclamation, the cut-and-fill will need to be reversed, the rock-slope underground development waste and the subsoil cover redistributed, and the surface recontoured in order to achieve the post-mining contours shown on Plate 5-6, which is not discussed in Appendix 5-7. There is no mass balance accounting for the material to be redisturbed and moved at reclamation; in particular, the placement of the 28,000 yd^3 of rock-slope underground development waste must be clarified. Reclamation costs and the amount of the reclamation bond cannot be determined without this information.

Findings:

The Permittee must provide the following information in accordance with:

R6435-301-536.500, The Permittee needs to document:

- that the Wildcat Loadout is willing to accept the Lila waste,
- that the Wildcat Loadout is able to accept the waste; that the Wildcat Loadout refuse pile is adequately designed and of sufficient size to handle and dispose of the additional waste, and
- the sections of the Wildcat Loadout MRP that describe the management and reclamation of the Wildcat refuse pile.

R6435-301-536.500, The Permittee must show how disposal of refuse at ECDC will satisfy the Coal Mining Rules. <u>It must be added that even if the Permittee provides this information, whether or not the Division has the regulatory authority to allow such a variation from the Coal Mining Rules is still open to question.</u>

R6435-301-536.600, -553; 830.130, -830.200, The Permittee needs to update the Mass Balance volumes in Table 1 of Appendix 5-4 using the cross sections on updated Plates 5-7A, -7B, and -7C. The Permittee must provide information on the removal or reclamation of the rock-slope underground development waste refuse pile.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

General

The following deficiency was identified in the January 2009 Deficiency Letter:

R645-301-413.100, -532, 722.500-JDS, Sections 2.2 and 2.9, and Tables 1, 3, and 4 of Appendix 7-4 and Plates 7-2 and 7-5 identify UA-7 (the disturbed area around the upper ventilation fan) as undisturbed. There may be other sections of the plan containing the same inaccuracy. The Permittee needs to correct this wherever it occurs in the submittal.

The Permittee has added UA-7 to Table 2, Disturbed Watershed Summary, and removed references to it as undisturbed in Tables 1, 3, and 4 of Appendix 7-4. Section 2.9 identifies all areas with the "UA" designation as undisturbed; although the disturbed area around the Fan Portal is identified as UA-7 in Table 2, it is clear from Plates 7-2, 7-5 and 5-2 and Tables 3 and 5 that the area around the upper ventilation fan is disturbed.

Diversions: General

All flows that are to be diverted are classified as miscellaneous. Locations of culverts and ditches are shown on Plate 7-5.

All proposed diversions are temporary. The Permittee has designed the diversions and committed to locate, construct, and maintain diversions and appurtenant structures so they will be stable; minimize adverse impacts to the hydrologic balance in the permit and adjacent areas; prevent - to the extent possible using the BTCA - additional contributions of suspended solids to streamflow outside the permit area; prevent material damage outside the permit area; assure the safety of the public and provide protection against flooding and resultant damage to life and property; and comply with all applicable local, State, and Federal laws and regulations (733.210, 742.110, 742.311, 751, 752.100).

The diversions will be removed at final reclamation, or before if no longer needed, and disturbed lands restored (Section 742.311); however, Carbon County will replace the culvert that currently carries the flow from the Right Fork of Lila Canyon under the road.

Diversions: Miscellaneous Flows

The following deficiency was identified in the January 2009 Deficiency Letter:

R645-301-742.124-JDS, Table 8 shows expected flow from a 10-yr, 6-hr storm in ditch DD-2c exceeds 5 fps, the criterion for lining a ditch with rip-rap, yet Table 8 indicates this ditch is not planned to be rip-rapped. The Permittee must resolve this discrepancy.

Details for protection of drainage control structures are provided in appendix 7-4. Adequately sized rip-rap, concrete or other approved armoring will protect all diversion discharges (Section 734). Section 2.11 of Appendix 7-4 states that ditches projected to carry flow velocities of 5 fps or greater will be lined with rip-rap. Table 8 shows which ditches will be rip-rapped and gives the D_{50}.

The following deficiency was identified in the January 2009 Deficiency Letter:

R645-301-742.332-JDS, The Permittee needs to include an updated Figure 3 in Appendix 7-4 (along with other Figures). Figure 3 tabulates ditch flow depth and area based on a 10-yr, 24-hr storm. The currently approved Figure 3 is out-of-date: it does not include all the proposed ditches and values shown do not agree with those in Table 8 of the current submittal.

In the July 15, 2009 Response to Surface Deficiencies letter, the Permittee states that "Due to the number of ditches, Figure 3 has been modified to show the typical channel shape and the ditch sizes are presented in Table 8". Table 8 does summarize ditch design parameters, and in the Table of Contents for Appendix 7-4, Figure 3 is identified as a Disturbed Ditch Typical Section. However, the new Figure 3 was not included in Appendix 7-4 of the submittal (all figures are missing from this appendix in the submittal; see discussion under PERMIT APPLICATION FORMAT AND CONTENTS). The Permittee needs to include an updated Figure 3 (Disturbed Ditch Typical Sections) in the submittal.

The Permittee used the Culvert Headwater Depth Nomograph in Figure 1 of Appendix 7-4 to determine the minimum culvert diameter. For culverts having either a HW/D ratio equal to or greater than 1.0 or a slope less than 2%, the Permittee used FlowMaster to determine the adequacy of proposed pipe diameters (Table 9 shows all culverts have a slope greater than 2%, and although HW/D ratios are not presented, it appears from Table 9 that all culverts were designed using FlowMaster.)

Culverts carrying runoff from disturbed areas have been sized to safely carry flows from a 10-yr, 24-hr event. This meets or exceeds the requirements of the Coal Mining Rules. Tables 9 and 10 in Appendix 7-4 summarize the culvert design parameters.

Tables 9 and 10 in Appendix 7-4 summarize the culvert design parameters, including rip-rap sizes for the outlets. FlowMaster v6.0 calculation sheets are in Appendix 7-4.

The Permittee states that culverts carrying runoff from undisturbed areas have been sized to safely carry expected flows from a 100-yr, 6-hr event. Culvert UC-1, the only culvert in this class, will divert the flow of the Right Fork of Lila Canyon under the main sedimentation pond.

The following deficiency was identified in the January 2009 Deficiency Letter:

R645-301-121.200-JDS, The Permittee needs to clarify the proposed size of culvert UC-1.

Culvert UC-1		*48 inch (4 ft) diameter*	*60 inch (5 ft) diameter*
	Chapter 5		*Section 520 – page 15*
	Chapter 7		*Section 744.100 - page 86*
		Plate 7-6a	
	Appendix 7-4		*Introduction – page 3*
			Section 3.1 b) – page 39
		Table 10 - page 37	
		Section 4.2 - page 53	
			Page 20 of the Culvert Flow Velocity Calculation Worksheets
		Appendix 1 of Appendix 7-4; Culvert Outlet Rip-Rap Apron Flow Velocity Calculation	

Culvert UC-1 is to be a 60-inch culvert. The text, tables, calculations, and plates have been changed to reflect this.

Stream Buffer Zones

Plate 5-2 shows the locations where the permit area boundary lies within 100 ft of the mapped channel of Lila Canyon Wash. The Permittee will line the undisturbed areas between the wash and surface facilities with boulders and signs to alert equipment operators of disturbed area boundary limits (Sections 731.600 and 521.261, and Plate 5-2).

There will be no diversion of Lila Canyon Wash (Section 742.320). Surface flows on the proposed facilities area will be directed away from Lila Wash, and no runoff from the disturbed area will enter this drainage (Appendix 7-4 and Plates 7-2 and 7-5). No spoil will be placed in this drainage (Section 535), and there will be no road construction in the stream channel (Section 732.410). No spoil will be placed the drainages. Lila Canyon Wash channel will be monitored below the buffer zone at site L-1-S. There are no drinking water sources or state appropriated water resources on Lila Canyon Wash below the escarpment.

No potential causal relationship between the planned operation and water quality and quantity in Lila Canyon Wash has been identified by the Permittee, the Division, or other parties,

and there are no proximate downstream uses. Therefore, impact of the planned mine operation on Lila Canyon Wash is expected to be nil and pre-mining water quality and quantity data for the wash are not necessary for the Division to make a finding of no adverse impact. The Division finds that the planned coal-mining and reclamation operations within 100 feet of Lila Canyon Wash will not cause or contribute to the violation of applicable Utah or federal water quality standards and will not adversely affect the water quantity and quality or other environmental resources of Lila Canyon Wash. The Division therefore authorizes the Permittee to conduct the planned coal-mining and reclamation activities within 100 feet of Lila Canyon Wash.

Sediment Control Measures

Appendix 7-4 indicates runoff from undisturbed areas UA-7 (fan site) and UA-8 (water treatment plant) and the Topsoil Storage Area is to be treated by Alternate Sediment Control such as silt fences, berms, and straw bales. The alternate methods and areas to be treated are discussed at the very end of the text (approx. pp. 56 and 57) of Appendix 7-4.

Siltation Structures: Sedimentation Ponds

The following deficiency was identified in the January 2009 Deficiency Letter:

*R645-301-R645-301-121.200-JDS, The Runoff Volume line in Table 11a indicates "8.73 acres*1.01 ac-in/12 in/ft": the notation "ac-in" is incorrect and confusing. The Permittee needs to replace "ac-in" with simply "in".)*

Plates 7-2 and 7-5 identify areas both north and south of the Right Fork of Lila Canyon as constituting undisturbed drainage UA-1. On the north side, 8.73 acres lie within the permit area boundary; however, the Permittee is not currently proposing to disturb this area and it is not included in Runoff Volume in Table 11a (item 2). Although it is not clearly explained in the Plan, the 1.01 in Runoff Volume for these 8.73 acres was calculated using 1.90 in of rainfall (10-yr, 24-hr event) and a disturbed-area CN of 90. The Runoff Volume in Table 11a (item 2) indicates "8.73 acres*1.01 in /12 in /ft": the notation "ac-in" is incorrect and confusing; the Permittee needs to replace "ac-in" with simply "in". The Sediment Storage Volume in Table 11a (item 3) does not include sediment from these 8.73 acres.

The following deficiency was identified in the January 2009 Deficiency Letter:

R645-301-R645-301-121.200-JDS, The 31.44 cfs value for Peak Flow (item 5) for Sediment Pond #1 Design in Table 11a is less than the total of the indicated component flows [26.58 cfs (disturbed watersheds reporting to Pond #1, Table 5) + 7.65 cfs (AU-5, footnote 2 of table 11a) = 34.23 cfs], so how the Permittee determined a peak flow of 31.44 cfs is not clear. The Permittee needs to clarify how this Peak Flow was calculated.

Peak Flow in Table 11a (item 5) has been used to size the spillways for Sedimentation Pond #1. Footnote #2 indicates that the Peak Flow of 28.22 cfs includes 1.64 cfs of flow from undisturbed area UA-5, which has been included because runoff from this area may report to the pond if the surface facilities are expanded. The Peak Flow from all other disturbed areas, based on Table 5, is 26.58 cfs.

The following deficiency was identified in the January 2009 Deficiency Letter:

R645-301-R645-301-121.200-JDS, Peak Flow used in the pond volume calculations in Table 11a includes flow from UA-5, which is not identified. There is no information on watershed UA-5 on Plates 7-2 and 7-5, nor in Tables 1, 3, 4, 5, or 6 (although there is an unlabeled item between UA-4 and UA-6 in Table 3). The Permittee must identify watershed UA-5 on Plates 7-2 and 7-5 and include the parameters and calculations related to this watershed wherever appropriate in Tables 1 through 13b, and include the Watershed Calculations sheet for this watershed.

UA-5 is identified on Plates 7-2 and 7-5, and information on UA-5 has been added to Tables 1, 3, 4, and 6 of Appendix 7-4. Because UA-5 is not to report to sedimentation Pond #1, it is not in Table 5. The Permittee has included the Watershed Calculation sheets for UA-5.

Table 8 does not show UA-5 reporting to any structure other than UC-1, and Plate 7-5 does not show a ditch that can collect the runoff from UA-5 and carry it to UC-1. Plate 7-5 shows DD-20 crossing the east side of disturbed area DA-8c, continuing southwest across adjacent undisturbed UA-5, and then along the down-slope edge of UA-5 to Sedimentation Pond #1; as shown , DD-20 would intercept most of the runoff from UA-5 and carry it to Sedimentation Pond #1. According to Plate 7-5 and Table 6, culvert DC-8 reports to both DD-8c and DD-20, so it appears that DD-20 as shown on Plate 7-5 is not needed for the disturbed drainage system and could be redesigned to carry the runoff from UA-5.

On Plates 7-2 and 7-5, the small disturbed area DA-8c and a small corner of DA-13b are hatched with the green diagonal lines that, according to the Explanation on Plate 7-2, indicate undisturbed area. The soils in these areas are not to be disturbed, but for designing the surface drainage system the Permittee has dealt with them as disturbed areas (Table 5) and routed runoff from them to Sedimentation Pond #1.

Discharge Structures

The primary and emergency spillways of Sedimentation Pond # 1 will discharge into UC-1. On Plate 7-6a, these spillways are shown as 30 in diameter CMP risers. Each spillway is designed to be large enough to safely pass the runoff from a 25-year, 6-hour precipitation event (Section 743.130), which meets the requirements of the Utah Coal Mining Rules. There will be a decant on the primary spillway, and an oil skimmer on each spillway.

The following deficiency was identified in the January 2009 Deficiency Letter:

R645-301-742.330-JDS, From Sedimentation Pond #2, both spillways will report to an unnamed 24 in CMP culvert that will discharge to the Middle Fork of Lila Canyon. The Permittee must identify this culvert, show it on appropriate maps, and present design specifications and calculations similar to those provided for the other culverts.

The primary spillway for Sedimentation Pond #2 is to be a 12 in diameter CMP riser, and the emergency spillway a 15 in dia. CMP riser (Plate 7-6b). There will be a decant on the primary spillway and an oil skimmer on each spillway. Both spillways will report to SP2-1, a 24 in CMP culvert that will discharge to the Middle Fork of Lila Canyon below the mine site. Design specifications and calculations for SP2-1 are in Table 9 and on p. 21 of the Flow Velocity Calculation Worksheets. Each spillway is large enough to safely pass the runoff from a 25-year, 6-hour precipitation event (Section 743.130), which meets the requirements of the Utah Coal Mining Rules.

Findings:

The Permittee has satisfactorily addressed the Operation Hydrology deficiencies identified in the January 26, 2009 Letter of Deficiency; however, additional deficiencies have been identified in the materials submitted July 15, 2009. The Permittee must provide the following information in accordance with:

R645-301-742.300, The Permittee must clarify the following information on diversions:

- Table 6 (Appendix 7-4) does not show undisturbed area UA-5 reporting to any structure other than UC-1. Plate 7-5 does not show a ditch that can collect the runoff from UA-5 and carry it to UC-1. The Permittee needs to design a ditch to carry the undisturbed runoff from UA-5 to UC-1, include the calculation sheets and design information, and show the diversion on appropriate plates.
- Plate 7-5 shows DD-20 receiving flow from DC-8 and DD-8b then crossing the east side of disturbed area DA-8c, continuing southwest across adjacent undisturbed UA-5, and then along the down-slope edge of UA-5 to Sedimentation Pond #1; as shown, DD-20 would intercept most of the runoff from UA-5 and carry it to Sedimentation Pond #1 rather than to UC-1. According to Plate 7-5 and Table 6, culvert DC-8 reports to both DD-8c and DD-20, but Table 6 shows DD-8b reports only to DD-8c. DD-20 as shown on Plate 7-5 and described in Table 6 is not only not needed, but carries undisturbed drainage from UA-5 to Sedimentation Pond #1. The Permittee needs to redesign DD-20 or remove it from the plan.

RECOMMENDATIONS:

The application is not recommended for approval until all deficiencies are addressed.

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